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Newsletter for November 2023

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Common Medications in HRT

By Zennith | November 29, 2023

We are taking the covers off of a new page in the Gender Resources area of our website, the [Common Medications in HRT]() page. This is intended to introduce people to many of the common medications they might encounter, and potentially need to choose between, for gender affirmation treatments if appropriate for their goals. Please remember that our page is not comprehensive, may contain mistakes, and was written by people who do not work in the field of gender affirmation or endocrinology.

The options for feminizing, masculinizing, or nonbinary treatments can be dizzying, and it can be difficult for patients to understand what effects, and what risks, a drug might actually have. Information quality can vary widely from anecdotal cases of drugs working perfectly, and scary-sounding warnings that may or may not be relevant.

We obviously cannot and will not make medical recommendations - but we can give you information, links to sources, and a starting point to have an informed discussion with medical professionals who can help you weigh your options.

The page is divided into three sections: feminizing meds, masculinizing meds, and a discussion about possible approaches for nonbinary individuals.

Within the feminizing meds, we discuss how, in general, an estrogen source and an antiandrogen are combined. The type of estrogen can be an important choice. The antiandrogen chosen might depend on where you life - spironolactone in the United States, or cyproterone acetate in the European Union. (GnRH modulators will be included in a future version as well).

Additional antiandrogens might include finasteride or dutasteride, potentially useful for blocking some dihydrotestosterone signaling. As well, we briefly mention the relative newcomer bicalutamide.

Progestogens/progestins, as we learned in our reading, are not recommended by the WPATH's Standards of Care Version 8 (SOC-8). An interesting technicality is that cyproterone acetate is actually a progestin, but when prescribed for gender affirmation, it is mainly being used as an antiandrogen, not as a progestogen source.

Masculinizing HRT mainly means testosterone. We checked around to make sure - was it really this simple? Well...mostly, yes! Testosterone is generally used as a monotherapy, and can cause development of facial and body hair, redistribution of fat, gain in muscle size, and deepening of voice.

That said, there are some choices to make for patients desiring masculinizing HRT. Testosterone could be injected - either intramuscularly, or subcutaneously (just below the skin), and the choice could potentially go according to patient preference and comfort. Alternately, testosterone could be applied as a cream or gel, or as a patch. In all cases though, everything we found suggests that oral testosterone is not recommended for long-term, gender affirmation HRT.

We also briefly mention how finasteride or dutasteride - yes, those drugs again! - could actually be useful for transmasculine individuals as well, to modulate the body's response to androgen signaling.

Finally, we discuss the strategies that can be employed for nonbinary individuals. Nonbinary individuals unfortunately are in relatively new territory, and it is more difficult to find strong scientific evidence of specific drug strategies that can be employed safely and effectively.

Drug titration, and mixtures of feminizing and masculinizing therapies, can be considered. But remember - some level of sex hormone signaling, whether estrogen-related, testosterone-related, or otherwise, is important for bone and cardiovascular health.

We also looked into Selective Estrogen Receptor Modulators, potentially of interest for nonbinary AMAB individuals. The research is still at an early stage, and there is little characterization of their effect on mental or brain health if used for many years by nonbinary people. This is important, considering that SERMs - artificial drugs intended to substitute for natural sex hormones - would need to take over for those natural sex hormones' activities in the brain.

Overall, this article was very interesting for us to research and write. It made us realize just how complex the field is - and motivated us even more to help patients have more informed conversations with their doctors. We can't imagine having to learn about all of this information within the space of a single doctor's appointment and walking away with the correct decision. So, we genuinely hope that this article helps people get the care that they need.

Thanks for reading and we hope you enjoy!

Link to article: Common Meds in HRT

Head Anatomy Video - Work in Progress!

By Zennith | November 30, 2023

The most complex single area of anatomy that needs changed for an anthro is the head. Even if the individual technical methods to change the head are relatively easy to research and optimize (many of the techniques are already available in some form today), it's a lot of moving parts all at once. It's hard to capture everything at once, and even harder to tell that story.

Last year, we arrived at some conclusions that made us feel good about being able to accomplish anthro head anatomy. The braincase size works, and we discovered that the inner and middle ears don't have to change from where they're at in humans, either. (Animals like dogs and foxes appear to have their ears on top of their heads, but the sound gets directed downwards with the vertical auditory canal, before turning inwards to their inner ear, towards the bottom of the cranium).

We developed a couple different 3D models while answering those questions: Lathreas developed a wolf model with a high amount of emphasis on the outwards anatomy, and I developed a model building up from individual craniofacial bones. (See figures on next page!)

Unlike the other areas we are researching - e.g. the integument or the tail - the individual things we need to do with the head are simple. We don't need to understand stem cell niches or growth cycles (unlike the integument), and we don't really need to understand how move a new part of the body based on interpreting and acting on the muscle impulses of other nearby muscles (unlike the tail project - with the possible exception of moving the outer ear with new musculature, which would probably use the same technology as the tail project).

Top - Wolf model, with fur patterns and eye details visible, by Lathreas
Bottom - Canid craniofacial model, with cutaway boolean applied, by Zennith

The challenge with the head is, again, putting it all together. And that includes handling the complex 3D geometry, basing the anatomy on reliable references, and ensuring that the anatomy can perform the physiological functions expected of it.

To answer this call, I have been putting together a detailed video to:

1. Analyze what anthro head anatomy would look like,
2. List the main differences between a human's and anthro's anatomy, and
3. Propose relevant techniques for accomplishing those differences.

This video (or perhaps video series, depending on length) is basically intended to substitute for a written review in the fashion of the Integument Review project. A video format will let us intuitively communicate all the detailed shapes and relationships between anatomical features - it should basically "come alive"!

One of the most important outcomes of this effort will be: we can have a new volunteer watch this video, and walk away with an understanding of the types of follow-up or hypothesis-driven projects we need to do relating to the head.

(And, as a bonus, it'll give us some good content for our YouTube channel, which needs some love. Hold on, YouTube, just a little longer!)

I wasn't sure where to begin at first. It's an ambitious video. Should we start by writing a script basically in the form of an essay? Should we plan particular shots first, using some of the 3D models we have lying around? I tried both of those for a bit, but realized we would get a meandering, confusing, and non-informative outcome.

The answer was right in front of me the whole time: prepare for this as if it were any other research presentation, using PowerPoint. Make outlines, make talking points and take-away messages with each slide, and plan out the visuals that are essential to each point.

The talk's organization has been crystalizing into the following:

1. Anthro anatomy
    a. Snout and overall head shape
    b. Internal head anatomy
    c. Ears
    d. Eyes (mainly focused on the anterior segment of the eye)
2. Comparing anthros to humans
    a. Changes to general head anatomy
    b. Changes to internal head anatomy which might include lengthened optic nerves (and some things that don't need changed, like the braincase)
    c. Ear modifications
    d. Eye modifications

3. Techniques
    a. A note about soft tissues including at least peripheral nerves generally being known to accommodate bone shape changes
    b. Surgical techniques and preserving connectivity of existing nerves
    c. Types of implants and grafts
    d. How to modify the ears, e.g. new muscle tissues and motor control potentially needed for them
    e. Iris modifications

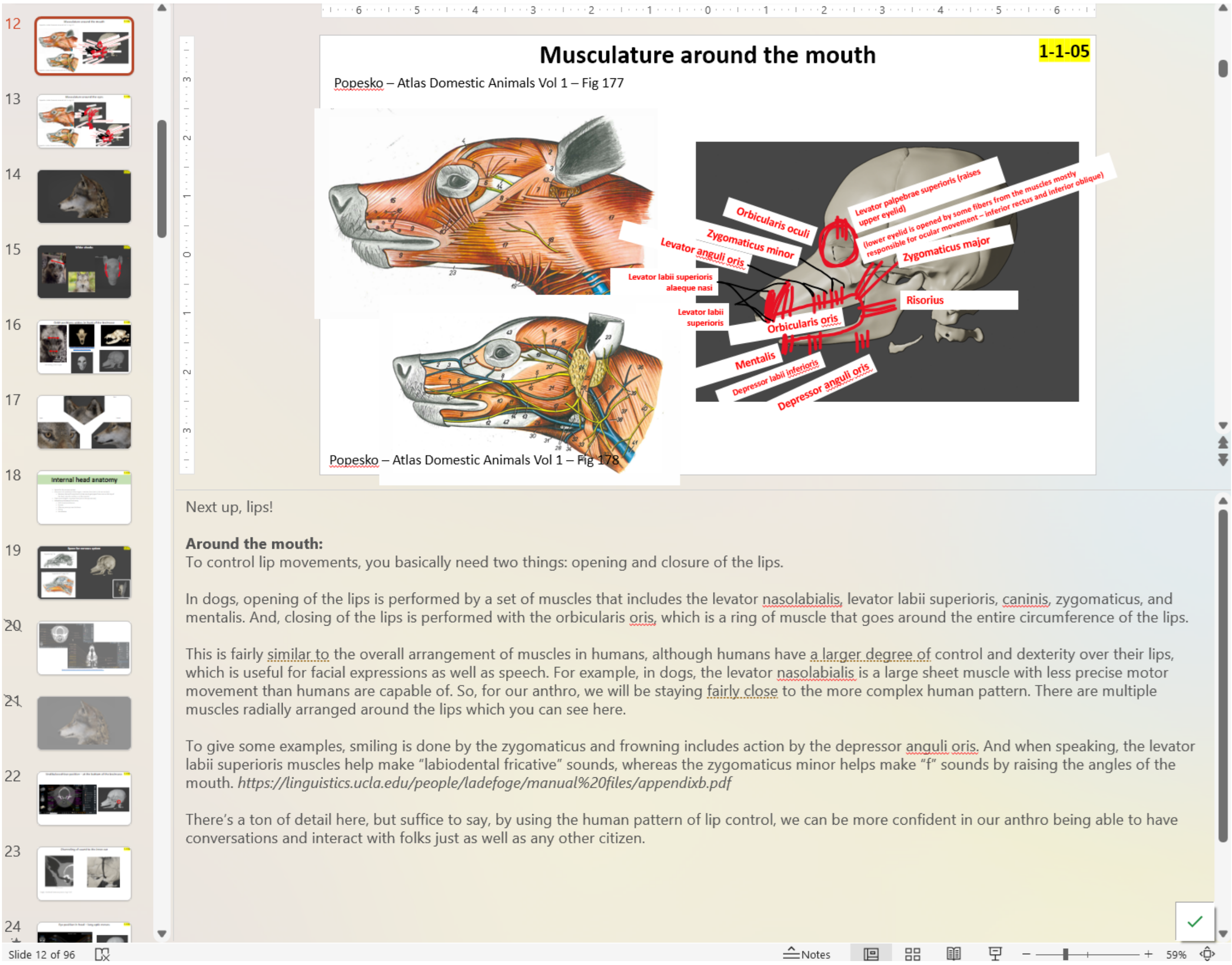
Let me show an example of just how rough this is - but how much I've been able to develop the script and figure out the most important points to illustrate. (Figure below)

I wrote this slide's script knowing I would be immediately taking a test recording - and indeed, took a test recording immediately after finishing it. There's nothing quite like that immediacy of feedback, hearing your own voice, to making sure that the content, and how you talk through it, actually sound right.

Shiny visuals will come soon of course - we've got some legit amazing 3D models and tons of artistic skill in the organization - and will be able to direct them to illustrate things in a useful way based on this groundwork.

The PowerPoint itself might not even be seen at all in the video - but in terms of organizing the information we want to get across, and how to say it, it's the perfect tool for the job! At least for me, the hardest parts are figuring out what to say, and how to generally illustrate the points I want to make, and I've now gotten past those parts for most of this project!

How I'm developing the video - short script components, in a messy, active workspace!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Notes
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Musculature around the mouth

1-1-05

Popesko – Atlas Domestic Animals Vol 1 – Fig 177

Popesko – Atlas Domestic Animals Vol 1 – Fig 178

Orbicularis oculi
Levator palpebrae superioris (raises upper eyelid)
(lower eyelid is opened by some fibers from the muscles mostly responsible for ocular movement – inferior rectus and inferior oblique)
Zygomaticus minor
Levator anguli oris
Zygomaticus major
Levator labii superioris alaeque nasi
Levator labii superioris
Risorius
Orbicularis oris
Mentalis
Depressor labii inferioris
Depressor anguli oris

Next up, lips!

Around the mouth:
To control lip movements, you basically need two things: opening and closure of the lips.

In dogs, opening of the lips is performed by a set of muscles that includes the levator nasolabialis, levator labii superioris, caninis, zygomaticus, and mentalis. And, closing of the lips is performed with the orbicularis oris, which is a ring of muscle that goes around the entire circumference of the lips.

This is fairly similar to the overall arrangement of muscles in humans, although humans have a larger degree of control and dexterity over their lips, which is useful for facial expressions as well as speech. For example, in dogs, the levator nasolabialis is a large sheet muscle with less precise motor movement than humans are capable of. So, for our anthro, we will be staying fairly close to the more complex human pattern. There are multiple muscles radially arranged around the lips which you can see here.

To give some examples, smiling is done by the zygomaticus and frowning includes action by the depressor anguli oris. And when speaking, the levator labii superioris muscles help make "labiodental fricative" sounds, whereas the zygomaticus minor helps make "f" sounds by raising the angles of the mouth. *https://linguistics.ucla.edu/people/ladefoge/manual%20files/appendixb.pdf*

There's a ton of detail here, but suffice to say, by using the human pattern of lip control, we can be more confident in our anthro being able to have conversations and interact with folks just as well as any other citizen.

So far, I’ve written out and recorded about 20 minutes of script and it’s going extremely well so far. I’ve basically finished part 1, anthro anatomy, so based on the length of what we have so far, we might be looking at a video series. The level of detail we get into with each anatomical area is part of why this video (series) will be so interesting to watch, and why I am excited about its scientific value, so I don’t think we want to cut much material just to reduce the video’s length.

I am aiming to complete the script and initial draft recording by December 18th (yikes!). Revisions and better visuals will probably take a few weeks.

Depending on what the length looks like, we’ll soon make the final decision on whether to release as 1 video or as a video series; if a video series, we’ll round out the script for all videos in the series (to make sure they all fit together), but then focus on revisions and better visuals only on the first video to get it out the door sooner.

We’ve been teasing work on this video for a while in our Discord community and I don’t want to leave people hanging. It’ll be out soon!